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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,089	03/31/2006	Mats Jalk	10400C-00200/US	1200
30593 7590 01/03/2008 HARNES, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195			EXAMINER LIN, ING HOUR	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 01/03/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

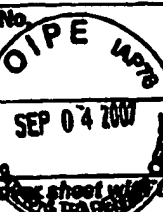
10/560,089

Applicant(s)

JALK ET AL.

Examiner

Ing-Hour Lin



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- The MAILING DATE of this communication appears on the cover sheet with the correspondence address -

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2005 and 31 March 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/9/05 & 3/31/06
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2, 4-7, 15-17, 19-23 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable JP 54-119336 et al in view of JP 59206151.

JP 54-119336 substantially teaches the claimed device and method for detecting the presence of slag in a shroud 18 for guiding molten metal 10 from a ladle 14 to a tundish 20, comprising transmitting and receiving coils 40, 42 located at the two branches of a forked coil holder 30.

JP 54-119336 fails to teach the use of an integrated shroud manipulator. However, JP 59206151 (abstract) teaches the use of a shroud manipulator (long nozzle installation device) having

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integrated shroud manipulator E (see Fig. 1) connected to a slag detector-fastening frame for the purpose of improving the accuracy of the slag detector. It would have been obvious to one having ordinary skill in the art to provide JP 54-119336 the use of an integrated shroud manipulator as taught by JP 59206151 in order to reduce the relative motion between the shroud and detector and improve the accuracy of the slag detector (JP 59206151, abstract).

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable JP 54-119336 et al in view of JP 59206151 as applied in claims 1-2, 4-7, 15-17, 19-23 and 29 above and further in view of Davidkhanian et al.

JP 54-119336 in view of JP 59206151 fails to teach the use of changing frequency of the detector. However, Davidkhanian et al (col. 4, lines 66+) teaches the use of changing frequency of the detector for the purpose of preventing the undesirable turbulence (vortexing) flow. It would have been obvious to one having ordinary skill in the art to provide JP 54-119336 in view of JP 59206151 the use of changing frequency of the detector as taught by Davidkhanian et al in order to prevent the undesirable turbulence (vortexing) flow such that the slag sensitivity constant can be set to maximum (Davidkhanian et al, col. 8, lines 54+).

5. Claims 3, 9, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable JP 54-119336 et al in view of JP 59206151 as applied in claims 1-2, 4-7, 15-17, 19-23 and 29 above and further in view of Theissen et al.

JP 54-119336 in view of JP 59206151 fails to teach the use of electromagnetic fields or alternating frequencies of the detector. However, Theissen et al (col. 3, lines 63+) teaches the use of electromagnetic fields or alternating frequencies of the detector having coils in toroidal

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configuration around the shroud (outlet pipe 6) for the purpose of increasing detector sensitivity.

It would have been obvious to one having ordinary skill in the art to provide JP 54-119336 in view of JP 59206151 the use of electromagnetic fields or alternating frequencies of the detector having coils in toroidal configuration around the shroud (outlet pipe 6) as taught by Theissen et al in order to increase detector sensitivity (Theissen et al, col. 4, lines 7+).

6. Claims 10-14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable JP 54-119336 et al in view of JP 59206151 as applied in claims 1-2, 4-7, 15-17, 19-23 and 29 above and further in view of Kings et al.

JP 54-119336 in view of JP 59206151 fails to teach the use of defining a voltage range and signal as a function of flow condition of molten metal. However, Kings et al (col. 3, lines 58+) teaches the use of defining a voltage range and signal as a function of flow condition of molten metal for the purpose of increasing detector reliability. It would have been obvious to one having ordinary skill in the art to provide JP 54-119336 in view of JP 59206151 the use of defining a voltage range and signal as a function of flow condition of molten metal as taught by Kings et al in order to increase detector reliability (Kings et al, col. 7, lines 52+).

7. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable JP 54-119336 et al in view of JP 59206151 and further in view of Kings et al as applied in claims 10-14 and 24 above and further in view of Heaslip et al.

JP 54-119336 in view of JP 59206151 and further in view of Kings et al fails to teach the use of sensor including position sensor and weight sensor. However, Heaslip et al (col. 3, lines

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43+) teaches the use of sensor including position sensor 52 and weight sensor 48, 50 and teeming device (see Fig. 9) for the purpose of effectively controlling the molten metal flow. It would have been obvious to one having ordinary skill in the art to provide JP 54-119336 in view of JP 59206151 and further in view of Kings et al the use of sensor including position sensor and weight sensor as taught by Heaslip et al in order to effectively control the molten metal flow (Heaslip et al, col. 6, lines 19+ and col. 16, lines 6+).

8. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable JP 54-119336 et al in view of JP 59206151 as applied in claims 1-2, 4-7, 15-17, 19-23 and 29 above and further in view of 54-110932.

JP 54-119336 in view of JP 59206151 fails to teach the use of directional core. However, JP 54-110932 (see Fig. 2) teaches the use of directional core 34 in a slag detector 30 for the purpose of directing the electromagnetic field towards or away from the shroud. It would have been obvious to one having ordinary skill in the art to provide JP 54-119336 in view of JP 59206151 the use of directional core 34 in a slag detector 30 as taught by JP 54-110932 in order to direct the motion of the electromagnetic field towards or away from the shroud (JP 54-110932, Fig. 2).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jonathan Johnson can be reached on (571) 272-1177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



L-H. Lin

8/17/07



JONATHAN JOHNSON  
PRIMARY EXAMINER